

$$\left(\frac{B}{D}\right) \geq \left(\frac{2B}{S}\right) + \left(\frac{t}{1000000}\right)$$

Solving for the minimum buffer size in the above equation yields the following equation which gives the minimum buffer size:

$$B \geq \left(\frac{DS}{S-2D}\right) \times \left(\frac{t}{1000000}\right)$$

In one embodiment, the system may also function as an

5 MP3 (Moving Pictures Experts Group (MPEG-1) Part 3 ISO/IEC 11172-3 (1993)) player/recorder that can download and record audio from the Internet. In this way, the same storage may be used for example to store and replay radio and Internet originated audio files.

10 While the present invention has been described with respect to a limited number of embodiments, those skilled in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended claims cover all such modifications and variations as fall

15 within the true spirit and scope of this present invention.

What is claimed is:

1           1. A method comprising:  
2                 enabling an audio stream to be received;  
3                 enabling the audio stream to be recorded on a  
4             random access storage unit; and  
5                 enabling a portion of the audio stream to be  
6             retrieved from the storage unit while continuing to record  
7             the audio stream.

1           2. The method of claim 1 wherein enabling an audio  
2             stream to be received includes enabling a radio broadcast  
3             to be received.

1           3. The method of claim 1 wherein enabling an audio  
2             stream to be recorded includes enabling the audio stream to  
3             be recorded to a hard disk drive.

1           4. The method of claim 1 wherein enabling a portion  
2             of the audio stream to be retrieved includes enabling a  
3             portion of the audio stream to be retrieved shifted by a  
4             time delay and wherein after the time delay falls below a  
5             predetermined threshold, enabling the retrieving of a  
6             portion of the audio stream from the storage unit to be  
7             discontinued.

1           5. The method of claim 1 including enabling the  
2             initiation of one or more storage operations of the audio

3 stream into a random access storage unit and enabling  
4 initiation of one or more random access reads of the audio  
5 stream from the random access storage unit, wherein the one  
6 or more stores are multiplexed with the one or more reads.

1 6. The method of claim 5 including enabling the one  
2 or more reads of the audio stream from the storage unit to  
3 be used to playback the audio stream at a rate faster than  
4 it is being stored.

1 7. The method of claim 6 wherein after the time  
2 delay falls below a predetermined amount of time, enabling  
3 the one or more reads from the storage unit to be  
4 terminated.

1 8. The method of claim 6 including enabling the one  
2 or more reads to access the audio stream offset by a time  
3 delay from the audio stream being stored, the time delay  
4 being variable over time.

1 9. The method of claim 1 including enabling the  
2 audio information to be stored as received, for playback in  
3 the sequence the information was received and allowing  
4 playback of any portion of the stored audio information  
5 while continuing to store the incoming audio information.

1           10. The method of claim 1 including allowing the  
2 playback of the audio information to be paused while  
3 continuing to store the incoming audio information.

1           11. The method of claim 1 including enabling  
2 automatic playback of a portion of said stored audio  
3 information having a predetermined duration.

1           12. An article comprising a medium storing  
2 instructions that enable a processor-based system to:  
3           receive an audio stream;  
4           record the audio stream to a random access  
5 storage unit; and  
6           retrieve a portion of the audio stream from the  
7 storage unit while continuing to record the audio stream.

1           13. The article of claim 12 further storing  
2 instructions that enable the processor-based system to  
3 receive a radio broadcast.

1           14. The article of claim 12 further storing  
2 instructions that enable a processor-based system to record  
3 the audio stream to a hard disk drive.

1           15. The article of claim 12 further storing  
2 instructions that enable the processor-based system to

3 retrieve the portion of the audio stream shifted by time  
4 delay and wherein after the time delay falls below a  
5 predetermined threshold, discontinue the retrieving of a  
6 portion of the audio stream from the storage unit.

1 16. The article of claim 12 further storing  
2 instructions that enable the processor-based system to  
3 initiate one or more storage operations in the audio stream  
4 into random access storage units and initiate one or more  
5 random access reads on the audio stream from the random  
6 access storage unit, wherein the one or more storage are  
7 multiplexed with the one or more reads.

1 17. The article of claim 16 further storing  
2 instructions that enable the processor-based system to use  
3 the one or more reads on the audio stream from a storage  
4 unit to playback the audio stream at a faster rate than it  
5 is being stored.

1 18. The article of claim 17 further storing  
2 instructions that enable the processor-based system to  
3 terminate the one or more reads from the storage unit after  
4 the time delay falls below a predetermined amount of time.

1 19. The article of claim 17 further storing  
2 instructions that enable the processor-based system to

3 access the audio stream by one or more reads offset by a  
4 time delay from the time the audio stream is stored, the  
5 time delay being variable over time.

1 20. The article of claim 12 further storing  
2 instructions that enable the processor-based system to  
3 store the audio information as received, for playback in  
4 the sequence the information was received and playback any  
5 portion of the audio information while continuing to store  
6 the incoming audio information.

1 21. The article of claim 12 further storing  
2 instructions that enable the processor-based system to  
3 pause the playback of audio information while continuing to  
4 store the incoming audio information.

1 22. The article of claim 12 further storing  
2 instructions that enable the processor-based system to  
3 automatically playback a portion of said stored audio  
4 information having a predetermined duration.

1 23. A system comprising:  
2 a processor;  
3 a randomly accessible memory coupled to said  
4 processor;  
5 an audio receiver coupled to said processor; and

6                   a storage storing instructions that enable the  
7 processor to record an audio stream onto said memory and to  
8 retrieve a portion of the audio stream from the memory  
9 while continuing to record the audio stream.

1                 24. The system of claim 23 wherein said system  
2 includes an MP3 player.

1                 25. The system of claim 23 wherein said system  
2 includes a radio receiver.

1                 26. The system of claim 23 including a device to  
2 compress an audio stream.

1                 27. The system of claim 23 including a device to  
2 decompress the stored audio stream.

1                 28. The system of claim 23 wherein said system is a  
2 computer system.

1                 29. The system of claim 23 wherein said storage  
2 stores instructions that cause the playback of the audio  
3 stream to catch up with the ongoing recording of the audio  
4 stream.

1           30. The system of claim 23 including a multiplexer to  
2 multiplex reads and writes to said memory.